

ABSTRACT

Methods of designing the structure of multiple-input multiple-output (MIMO) PID controllers and methods of finding the optimal values for the MIMO PID parameters are disclosed. The optimal values of MIMO PID parameters are obtained by using an optimization algorithm which minimizes the largest modulus of all poles of the discrete time closed loop transfer function from set point SP to process variable PV, with or without user prescribed constraints on the PID parameters. Methods of designing the structure of single-input single-output (SISO) PID controllers and methods of finding the optimal values for SISO PID parameters are also disclosed as special MIMO PID controller cases.